WHAT IS CLAIMED IS:

1. A system comprising:

a remotely situated plurality of sensors that sense information;

a locally situated workstation that receives the information from the remotely situated plurality of sensors in the form of a set of data; and

a Fast Fourier Transform (FFT) analyzer interfaced with the plurality of sensors and workstation to receive information from the plurality of sensors in the form of time domain data points, to transform the data points into a lesser number of frequency domain data points to facilitate transmission as a set of data from the plurality of sensors to the locally situated workstation.

2. The system of claim 1, wherein said FFT analyzer is interfaced with the workstation to receive an input from the workstation to control the plurality of sensors.

3. The system of claim 1, wherein the plurality of sensors monitors a test object and generates sensor signals.

4. The system of claim 1, wherein the plurality of sensors monitors a test object and generates sensor signals, the system further comprising a data acquisition system that acquires the sensor signals from the plurality of sensors and digitizes the plurality of sensors into a digitized sensor data signal using an analog-to-digital converter device.

5. The system of claim 1, wherein the plurality of sensors comprise a vibration sensor.

6. The system of claim 1, wherein the plurality of sensors comprise a vibration sensor selected from the group consisting of an accelerometer, a proximity probe and a fiber optic accelerometer.

7. The system of claim 1, wherein the plurality of sensors comprise a temperature sensor.

8. The system of claim 1, wherein the plurality of sensors comprise a temperature sensor selected from the group consisting of a thermocouple, a thermistor, an RTD and an infrared sensor.

9. The system of claim 1, wherein the plurality of sensors comprise a probe that provides a once per revolution signal .

10. The system of claim 1, wherein the plurality of sensors comprise a strain measurement sensor.

11. The system of claim 1, wherein the plurality of sensors comprise a strain measurement sensor selected from the group consisting of a strain gauge and a thermal strain system.

12. The system of claim 1, wherein the plurality of sensors comprise a time code generator that provides a measure of time.

13. The system of claim 1, wherein the plurality of sensors comprise a voltage sensor.

14. The system of claim 1, wherein the plurality of sensors comprise a current sensor.

15. The system of claim 1, wherein the plurality of sensors comprise a current sensor selected from the group consisting of a Watt meter, a Vars meter and a speed meter.

16. The system of claim 1, wherein the plurality of sensors comprise a pressure sensor.

17. The system of claim 1, wherein the plurality of sensors comprise a

microphone.

18. The system of claim 1, wherein the plurality of sensors comprise a camera.

19. The system of claim 1, additionally comprising a central control system that includes an alarm apparatus that generates an alarm trigger whenever a sensed digitized data signal exceeds a selected alarm threshold.

20. The system of claim 1, wherein the workstation includes an audio monitoring system that allows an operator to hear a sensor signal.

21. The system of claim 1, wherein the workstation comprises an audio monitoring system selected from the group consisting of a speaker, a surround sound speaker system, and a headphone.

22. The system of claim 1, wherein the workstation comprises an output device selected from the group consisting of a plotter, a color printer, an e-mail message system and a printer.

23. The system of claim 1, wherein the workstation comprises a processing device and a storage device selected from the group consisting of a hard disk, a writable CD and a flexible disk.

24. The system of claim 1, wherein the FFT analyzer comprises a display selected from the group consisting of spectral amplitude versus frequency display, an octave display, a 1/3 octave display, a 1/6 octave display, a 1/12 octave display, a 1/24 octave display, an at least 100 line display and a waterfall display.

25. The system of claim 1, wherein the FFT analyzer comprises a display of averaged data to reduce random signal fluctuations.

26. The system of claim 1, used to monitor a test object selected from the group consisting of a steam turbine, a gas turbine, a generator, a heat recovery boiler, an

aircraft engine and a gear unit.

27. The system of claim 1, wherein the workstation comprises an input device selected from the group consisting of a keyboard, a mouse and a wireless mouse.

28. The system of claim 1, wherein the FFT is remotely situated in association with the plurality of sensors

29. The system of claim 28, further comprising a switching apparatus remotely situated and controllably connected to the plurality of sensors to permit selection of a sensor of the plurality from the workstation.

30. A system comprising:

a remotely situated sensor that senses information;

a remotely situated data acquisition system interfaced with the sensor to receive data from the sensor;

a Fast Fourier Transform (FFT) analyzer interfaced with the sensor in parallel with the data acquisition system to receive information from the sensor in the form of time domain data points and to transform the data points into a lesser number of frequency domain data points to facilitate transmission; and

a locally situated workstation that receives the data from the data acquisition system, that receives the frequency domain data points from the FFT analyzer and that controls the sensor via input in response to the data and data points.

31. A system comprising:

a remotely situated plurality of sensors that sense information to generate digitized sensor signals;

a data acquisition system for acquiring the digitized sensor signals from the

plurality of sensors;

an interface device associated with the data acquisition system that converts the digitized sensor signals into an output data signal transmission stream;

a transmission apparatus that transmits the output data signal transmission stream from the interface device;

a local interface device situated remote from the sensors that receives the output data signal transmission stream from the transmission apparatus and converts the output data signal transmission stream into a digital central control system data input;

a central control system that receives the digital central control system data input and sends the data input as a set of central processed data;

a central processing transmission apparatus that relays the sent set of central processed data;

a locally situated workstation that receives the sent set of central processed data from the central processing transmission apparatus; and

a Fast Fourier Transform (FFT) analyzer interfaced with the plurality of sensors and workstation to receive information from the plurality of sensors in the form of time domain data points, to transform the data points into a lesser number of frequency domain data points that can be digitized by the interface device to facilitate transmission as a set of output data signal transmission stream from the plurality of sensors to the transmission apparatus.

32. The system of claim 31, wherein the central control system comprises a central storage device for storing the digital central control system data input, a central processing system for analyzing the digital central control system data and for generating a set of central processed data and a central output device for sending the set of central processed data.

33. The system of claim 31, further comprising a switching apparatus remotely situated and controllably connected to the plurality of sensors to permit selection of a sensor of the plurality from the workstation.

34. The system of claim 33, wherein the workstation receives the relayed set of central processed data from the central transmission apparatus and receives an input in response to the central processed data and transmit a signal to the switching apparatus to control the plurality of sensors.

35. The system of claim 31, wherein the transmission apparatus comprises a transmission link selected from an Internet connection, a DSL connection, an HPIB connection, a wireless connection and a satellite connection.

36. The system of claim 31, comprising a carrier selected from the group consisting of an Internet connection, a Local Area Network, a cable connection, a GPIB, an ethernet connection and a wireless connection.

37. The system of claim 31, wherein the remote data acquisition system further includes a remote data acquisition processing device for analyzing the digitized sensor data signal and a remote data acquisition storage device for storing the digitized sensor data.

38. A method comprising:

remotely monitoring an operating test object with a plurality of sensors to generate time domain data points;

remotely transforming the time domain data points to frequency domain data points with a Fast Fourier Transform (FFT) analyzer; and

transmitting the frequency domain data points to a local workstation.

39. The method of claim 38, wherein said FFT analyzer receives an input from the workstation to control the plurality of sensors.

40. The method of claim 38, additionally comprising monitoring a test object with the plurality of sensors and generating sensor signals from the monitoring.

41. The method of claim 38, additionally comprising monitoring a test object with the plurality of sensors, generating sensor signals from the monitoring and acquiring the sensor signals with a data acquisition system that digitizes the plurality of sensors into digitized sensor data signals.

42. The method of claim 38, wherein the plurality of sensors generate vibration data points.

43. The method of claim 38, wherein the plurality of sensors generate temperature data points.

44. The method of claim 38, wherein the plurality of sensors generate once per revolution signal data points.

45. The method of claim 38, wherein the plurality of sensors generate measurement signal data points.

46. The method of claim 38, wherein the plurality of sensors generate strain measurement signal data points.

47. The method of claim 38, wherein the plurality of sensors generate time coded signal data points.

48. The method of claim 38, wherein the plurality of sensors generate voltage signal data points.

49. The method of claim 38, wherein the plurality of sensors generate measurement current data points.

50. The method of claim 38, wherein the plurality of sensors generate pressure signal data points.

51. The method of claim 38, wherein the plurality of sensors generate sound signal data points.

52. The method of claim 38, wherein the plurality of sensors generate visual signal data points.

53. The method of claim 38, comprising sensing the frequency domain data points at the workstation and generating an alarm whenever a sensed digitized data signal exceeds a selected alarm threshold.

54. The method of claim 38, further comprising generating a display from the time domain data points, the display comprising a spectral amplitude versus frequency display, an octave display, a 1/3 octave display, a 1/6 octave display, a 1/12 octave display, a 1/24 octave display, an at least 100 line display or a waterfall display.

55. The method of claim 38, further comprising generating a display of averaged data to reduce random signal fluctuations from the time domain data point.

56. The method of claim 38, comprising monitoring an operating test object selected from the group consisting of a steam turbine, a gas turbine, a generator, a heat recovery boiler, an aircraft engine and a gear unit.

57. A method comprising:

remotely monitoring an operating test object with a plurality of sensors to generate sensor signals;

remotely digitizing the sensor signals;

remotely converting the digitized sensor signals into an output data signal transmission stream;

transmitting the output data signal transmission stream to a local interface device;

converting the output data signal transmission stream at the local interface device into a digital central control system data input;

sending the set of the central transmission processed data through a central processing transmission apparatus to a workstation;

displaying the set of central transmission processed data at a workstation display wherein an operator views the processed data;

selecting a sensor and inputting a selected sensor command according to the displayed set of central transmission processed data;

transmitting the selected sensor command through the central processing transmission apparatus to a remote controlled switching apparatus; and

selecting a sensor according to the selected sensor command in the remote controlled switching apparatus.

58. The method of claim 57, further comprising:

generating a data signal via the selected sensor and sending a selected sensor signal to a remote FFT apparatus;

processing the selected sensor signal into an FFT display at the FFT apparatus;

transmitting a digitized FFT display from the FFT apparatus to the workstation; and

displaying the digitized FFT display on the display device of the workstation.

59. The method of claim 57, further comprising:

determining a threshold sensor signal level;

comparing the selected sensor signal with the threshold sensor signal level; and

terminating operation of the test object when the threshold sensor signal level is reached or exceeded according to the comparison.

60. The method of claim 57, further comprising:

determining a threshold sensor signal level; and

comparing the selected sensor signal with the threshold sensor signal level in the digitized FFT display; and

terminating operation of the test object when the threshold sensor signal level is reached or exceeded according to the comparison of the display.

61. The method of claim 57, further comprising analyzing the digital central control system data to generate a set of central processed data and storing the set in an FFT memory device.